

Trigger model

❑ Scattered muon trigger (LAT):

For each charged muon (with $p_z < 0$), calculate:

$$\text{trigx} = 31.66 \text{ m} * p_x/p_z + 13.905/490 \text{ m} - q * 13.905 \text{ GeVm}/p_{xz} \text{ (old one)}$$

$$\text{trigx} = 31.661 \text{ m} * p_x/p_z + 14.391/490 \text{ m} - q * 14.391 \text{ GeVm}/p_{xz} \text{ (new one)}$$

$$\text{trigy} = -31.661 \text{ m} * p_y/p_z \text{ (same)}$$

where $q = \pm 1$ depending on the charge of the muon.

Keep events only if there is at least one muon with

$$p_z < 0 \ \&\& \ |x_{\text{trig}}| < 3.5 \text{ m} \ \&\& \ |y_{\text{trig}}| < 1.5 \text{ m} \ \&\& \ (|x_{\text{trig}}| > 0.1 \text{ m} \ \vee \ |y_{\text{trig}}| > 0.1 \text{ m})$$

❑ PCN trigger:

For each charged track ($q = \pm 1$, with $p_z < 0$), calculate:

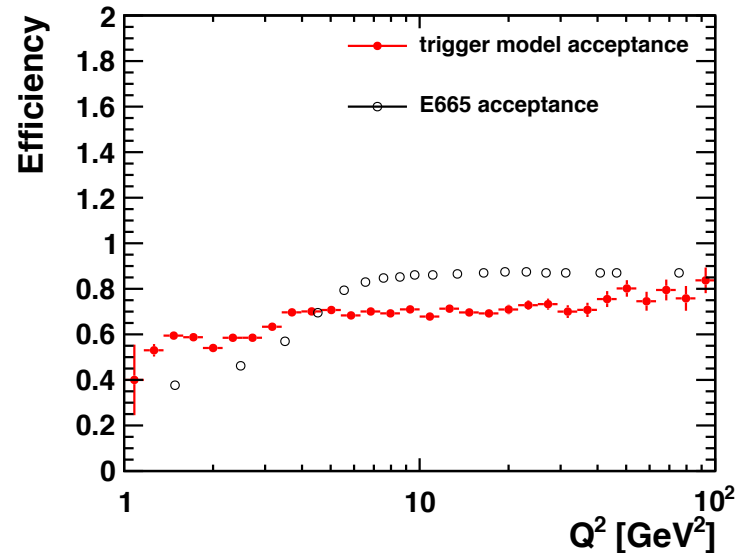
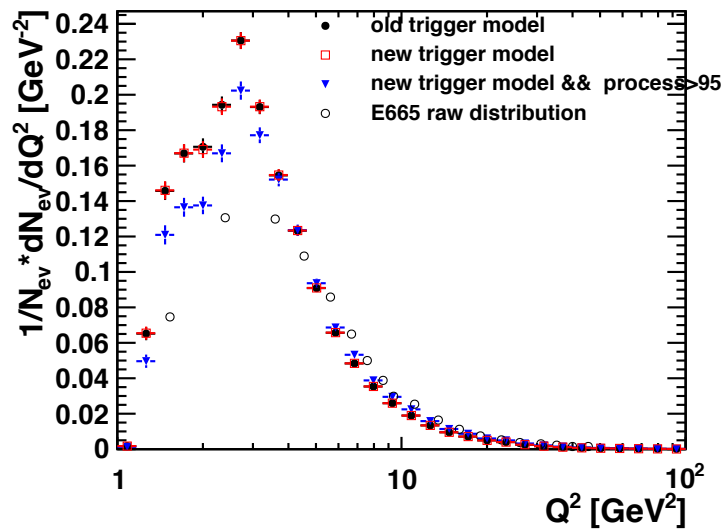
$$x_{\text{PC}} = 6.655 \text{ m} * p_x/p_z + 0.0049 \text{ m} + 5.352 \text{ GeVm}/p_{xz}$$

$$y_{\text{PC}} = -6.655 \text{ m} * p_y/p_z$$

Keep events only if there are 2 or more charged tracks which satisfy:

$$p_z < 0 \ \&\& \ 0.096 \text{ m} < |x_{\text{PC}}| < 1.0 \text{ m} \ \&\& \ |y_{\text{PC}}| < 1.0 \text{ m}$$

acceptance



Kinematic cuts:

$$0.1 < y < 0.85$$

$$1.0 < Q^2 < 100$$

$$0.0035 \text{ rad} < \theta < 6.29 \text{ rad}$$

$$8 < W < 30 \text{ GeV}$$

$$X > 0.002$$

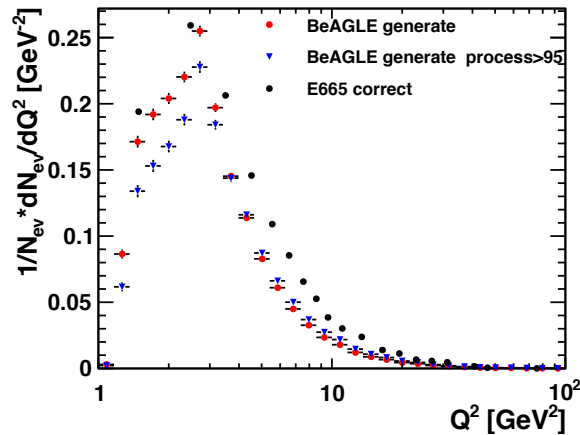
$$\text{E665 acceptance} = \frac{\text{raw distribution}}{\text{corrected data}}$$

$$\text{Trigger acceptance} = \frac{\text{number of events after trigger cut}}{\text{number of events before trigger cut}}$$

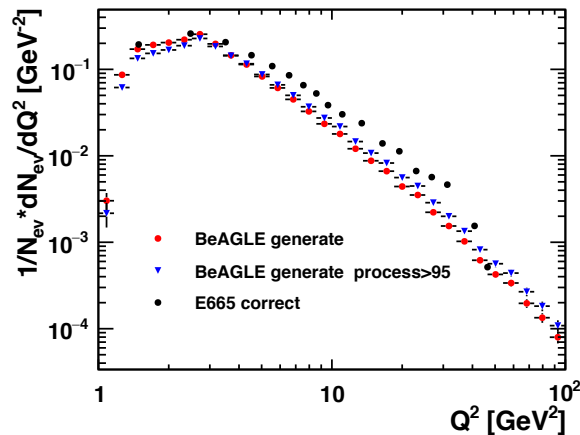
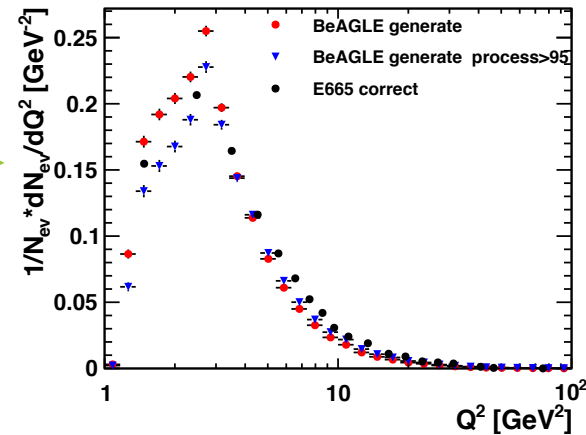
Events before trigger cut is with all the kinematic cuts.

number of events before trigger cut \leftrightarrow corrected data

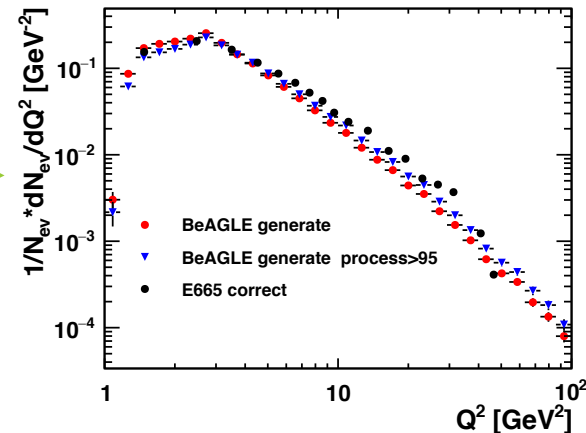
Corrected data



renormalize



renormalize



The “BeAGLE generate” is with all the kinematic cuts.

$$\text{E665 correct} = \frac{\text{raw distribution}}{\text{acceptance in the plot}}, \text{ renormalize after the correction.}$$

➤ To multiply BeAGLE by the acceptance curve and renormalize and then compare to raw E665 data.